

## Section 7 of 22 (7s - Irrigation Water Analysis Guide – Example)

Parameters Analyzed														
<ul style="list-style-type: none"> <li>Nitrogen (N)</li> <li>Phosphorus (P)</li> <li>Potassium (K)</li> <li>Sulfur (S)</li> <li>Calcium (Ca)</li> <li>Magnesium (Mg)</li> </ul>							<ul style="list-style-type: none"> <li>Zinc (Zn)</li> <li>Iron (Fe)</li> <li>Manganese (Mn)</li> <li>Copper (Cu)</li> <li>Sodium (Na)</li> <li>Chloride (Cl)</li> <li>Boron (B)</li> </ul>							<ul style="list-style-type: none"> <li>Bicarbonate (HCO<sub>3</sub>)</li> <li>Carbonate (CO<sub>3</sub>)</li> <li>Hydrogen Sulfide (H<sub>2</sub>S)</li> <li>pH</li> <li>Sodium Adsorption Ratio (SAR)</li> <li>Total Dissolved Solids (TDS)</li> </ul>
Irrigation Water Analysis Report (Date sample was collected: 10-10-08)														
Nutrient	NO <sub>3</sub> -N	P	K	SO <sub>4</sub> -S	Ca	Mg	Zn	Fe	Mn	Cu	Na	Cl		
mg/l = ppm	2.9	not analyzed	2.0	22	25	1.0	not analyzed	<0.05	<0.005	not analyzed	66	11		
Total Lbs./ac.	29.3		20.2	222.6	253.0	10.1		n/a	n/a		668.0	111.0		
Nutrient	HCO <sub>3</sub>	CO <sub>3</sub>	H <sub>2</sub> S	B	pH = 8.1 (most crops will grow satisfactorily on soils with a pH ranging from 6.2 to 8.3)									
mg/l = ppm	130	<10	not analyzed	0.04	SAR = 3.5 (used to evaluate potential Infiltration problems)									
Total Lbs./ac.	1315.6	101.2		0.41	TDS (mg/l of soluble salts) = 0.34 mmhos/cm (ECiw) x 640									
Example Calculation: 25 mg (Ca)/l x 0.23 = 5.75 lbs./ac-in of water. 5.75 lbs. of Ca x 44 ac-in = 253 lbs. of Calcium applied/acre/year														
What does this mean?														
<ul style="list-style-type: none"> <li>✓ Total Salt Load = 2,731.51 lbs./acre/year</li> <li>✓ 536 lbs. of Total Salt Load are <u>Nutrients</u> (N, K, S, Ca, Mg)</li> <li>✓ 668 lbs. of <u>Sodium</u> &amp; 111 lbs. of <u>Chloride</u></li> <li>✓ 1,417 lbs. of <u>Bicarbonate</u> &amp; <u>Carbonate</u> (i.e., Alkalinity, which buffers the pH above 7)</li> </ul>						<ul style="list-style-type: none"> <li>✓ pH of 8.1 is within acceptable range for most crops</li> <li>✓ SAR = 3.5 (No reduced infiltrations problems expected; degree of restriction on use: <u>Slight to Moderate</u>)</li> <li>✓ TDS: 0.34 mmhos/cm (ECiw) x 640 = 218 mg/l of Soluble Salts (Salinity Hazard is Very Low; No problems expected)</li> </ul>								
<ul style="list-style-type: none"> <li>➤ Producer: <u>Animas Valley</u></li> <li>➤ Irrigation Water needed: <u>44 ac-in</u> (i.e., 3.67 acre feet/acre/year)</li> <li>➤ Crop: <u>Alfalfa</u></li> <li>➤ Yield: <u>9 tons</u></li> <li>➤ Field #: <u>2</u></li> </ul>				<ul style="list-style-type: none"> <li>➤ Acres: <u>119</u></li> <li>➤ Soil Texture: <u>Silty Clay Loam</u></li> <li>➤ Crop Rotation: <u>Alfalfa (4-years) &amp; corn silage (1-year)</u></li> <li>➤ Irrigation System: <u>Center Pivot</u></li> </ul>				<p><u>Considerations:</u> (1) nutrient content, (2) Salt Loading, (3) pH, (4) SAR, (5) TDS (soluble salts), (6) Leaching Requirement, (7) Crop Salt Tolerance, (8) Soil Amendment Use, (9) Other: drainage, toxicities, nutrient imbalances, etc.</p>						